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CLINICAL CASE OF PULMONARY THROMBOEMBOLISM DIAGNOSED IN THE SUB-ACUTE PERIOD

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The article presents a clinical case of pulmonary embolism associated with thrombosis of the veins of the lower extremities. The disease remained unrecognized at the onset due to the absence of hemodynamic instability and was diagnosed only in the subacute period. Within two weeks of the suspected episode of thromboembolism, the patient developed symptoms of peripheral venous thrombosis, right ventricular heart failure, post-embolic pulmonary hypertension, and severe respiratory failure.

Keywords: pulmonary embolism, deep vein thrombosis of the lower extremities, post-embolic pulmonary hypertension, respiratory failure.

Pulmonary embolism (PE) is an acute occlusion of the arterial bed of the lungs by embolism (thromboembolism) of various sizes. The source of thromboembolic masses is most often located in the basin of the inferior vena cava, rarely in the right heart and veins of the upper extremities, so deep vein thrombosis (DVT) and PE are most often considered as part of a single venous thromboembolism syndrome [4]. The leading source of PE is thrombosis of the veins of the lower extremities.

The absence of clear clinical signs and diagnostic criteria, the often erased course of the disease explains the fuzziness of epidemiological data on the prevalence of PE. The annual incidence of pulmonary embolism in Europe ranges from 39 to 115 people per 100 thousand population, DVT - from 53 to 162 per 100 thousand population. It is known that venous thromboembolism takes the 3rd place in prevalence, second only to myocardial infarction and stroke. Moreover, the prevalence of PE increases with age, in people older than 80 years it is five times higher than in 50-year-olds [3, 5]. There are no accurate statistics on DVT and PE in Russia. Mortality in PE ranges from 16-40%, and in massive thromboembolism reaches 70% and is significantly reduced with timely diagnosis of the disease. [2, 3].

PE is usually accompanied by a reflex spasm of arterioles, which leads to a sharp restriction of blood flow in the lungs. Acute occlusion is a formidable cardiovascular complication of venous thrombosis of the systemic circulation and often manifests itself in the form of

acute right ventricular cardiovascular failure and life-threatening arrhythmias. However, the disease clearly manifests in the case of massive (more than 50% of the vascular bed is affected) or submassive (embolism of several lobar or many segmental pulmonary arteries) thrombosis. The typical clinical picture of PE is nonspecific, which explains the difficulty of its diagnosis. In the case of damage to only small branches of the pulmonary artery (less than 30% of the vascular bed), the diagnosis of PE can be difficult [1, 5].

Venous thromboembolism is more common in patients with cardiovascular disease [1, 4, 5]. Other significant predisposing factors are trauma and surgery, prolonged immobilization, peripheral venous catheterization, autoimmune diseases, cancer, obesity, hormonal and chemotherapy.

Timely diagnosis and adequate treatment significantly reduce mortality from this disease. More than 90% of deaths from PE occur in untreated patients. However, PE is diagnosed in vivo only in 7-14% of patients, and most of these patients were hospitalized [1, 4, 5]. The incidence of small branch PE at the outpatient stage is extremely low. At the same time, early diagnosis and timely treatment of venous thromboembolism is important for prolonging and improving the patient's quality of life [4, 6].

Considering the urgency of the problem and the importance of early diagnosis of venous thromboembolism, we present a clinical example of a patient with PE diagnosed on an outpatient basis.

Patient S., 81 years old, complained of a sudden loss of consciousness about two weeks ago. No more active complaints. With active questioning, it was found out that shortness of breath during slight physical exertion, which gradually increases in dynamics over two weeks, dry cough, and swelling of the legs are also disturbing.

From the anamnesis of the disease,

it is known that being at home about 2 weeks ago, the patient felt weakness, nausea. When measuring blood pressure, she lost consciousness. She does not remember the duration of the loss of consciousness; blood pressure (BP) during the measurement was 130/80 mm Hg. An emergency team was called. After examining the patient, given the stable condition: target blood pressure values, no chest pain, the patient was not hospitalized, further examination on an outpatient basis was recommended.

Within two weeks, shortness of breath appeared and began to increase to the level of FC 3, a dry cough developed, hyperemia and swelling of the left leg appeared, and then swelling of both legs.

The anamnesis of life without features, the patient has hypertension with selected therapy (perindopril 5 mg) and target BP numbers. Previously, during a dynamic examination, there was an increase in the level of blood cholesterol; she does not receive statin therapy. It can be noted that no risk factors for the development of thromboembolism were found in the anamnesis: surgery with prolonged immobilization, fractures, oncology, taking diuretic drugs and oral contraceptives, etc. Also, the patient denies the transferred coronavirus infection.

Objectively: a state of moderate severity. BMI - 21.2 kg / m². Skin and visible mucous membranes of normal color, moisture. Breathing in the lungs is hard, carried out in all areas, dry rales in the lower sections on both sides. The respiratory rate is 20 per minute. SpO₂ - 84% (there is a decrease within 1.5 weeks from 95%). Heart sounds are muffled, the rhythm is correct, regular, heart rate is 90 beats/min, blood pressure is 105/60 mm Hg. on both hands. The abdomen is moderately swollen on palpation, painless. The liver and spleen are not enlarged. Defecation without features. Diuresis corresponds to the drunk liquid (according to the patient). Peripheral edema of both

legs, the difference in the volume of the legs is 2 cm (the edema is more on the right), hyperemia of the right lower leg, pain on palpation.

An outpatient examination diagnosed a high probability of PE according to the Geneva scale: age over 65 years - 1 point, unilateral pain in the leg - 3 points, heart rate 75-95/min - 3 points, pain in one leg or unilateral edema - 4 points, total 11 points (high risk, PE likely).

Additional examination data:

Complete blood count: Er - 4.7×10^{12} / l (3.93-5.22), hemoglobin - 140 g / l, leukocytes - 8.4×10^9 / l (3.98-10.04), hematocrit - 41.6 (34.1-44.9), platelets - 182×10^9 / l (182-369). Leukocyte formula: neutrophils 54.6%, eosinophils 0.9%, monocytes 10.7%, lymphocytes 33.6%, basophils 0.2%; erythrocyte sedimentation rate - 26 (<20.2) mm/h.

Biochemical blood test: CRP - 78.72 mg / l (0-6.0), glucose - 11.2 mmol / l (4.2-6.4), total cholesterol 4.8 mmol / l (3.1-5.2), creatinine - 76.4 μ mol/l (44-80), uric acid - 364 μ mol/l (155-357), glomerular filtration rate - 63 ml/min (CKD-EPI).

Electrocardiogram: sinus rhythm, heart rate 83 per minute. PQ 0.16 s; QRS-0.07s; QT - 0.41 (corrected - 0.45 s). T-wave inversion from V1-V4, in the inferior leads - II, III, aVF - associated with right ventricular overload, pulmonary hypertension. An increase in the P wave more than 2.5 mm in the second lead. SI-QIII-TIII, deep S wave in lead 1, T negative in lead 3, deep Q in lead 3. Turning clockwise - shifting the transition point R / S to V6 (Fig.).

Echocardiography: systolic pressure in the pulmonary artery - 62.2 mm Hg. Art., a sharp increase in the right heart, expansion of the pulmonary artery trunk, paradoxical movement of the interventricular septum, contractile function of the left ventricle - 64% (according to Simpson), regurgitation on the tricuspid valve of the 1st degree.

Multispiral computed tomography of the chest organs: a picture of bilateral polysegmental interstitial pneumonia, probably of viral origin, minimal volume (CT-1), the volume of the right lung lesion is 8%, the left lung is 10%.

Ultrasound of the veins of the lower extremities: on the right: the veins (anterior and posterior tibial, peroneal, popliteal, superficial and common femoral, deep femoral, external iliac) on the right are completely passable and compressible by the sensor, the blood flow has a phase character and is associated with the act of breathing. Intraluminal formations are not located. Valves of deep veins (compression test) are well-founded. On the left, in the lumen of the femoral-popliteal segment, heterogeneous thrombotic masses are determined without signs of flotation, the blood flow is not recorded.

The trunk of the great saphenous vein (GSV) on the right is not located, tributaries up to 2.5 mm in diameter are determined. The trunk diameter of the left GSV is up to 3 mm; reflux is not located during compression.

The GSV on the right - the diameter of the orifice is 5.7 mm; during compression, the veno-venous shunt is not located. The GSV on the left has a diameter of the orifice of 5.3 mm; during compression, the veno-venous shunt is not located.

Small saphenous vein (SSV) diameter along the trunk on the right is up to 4.6 mm, the blood flow is distinct, reflux is determined during compression.

The trunk diameter of the left SSV is up to 3.9 mm; reflux is not located during compression.

SSV on the right, the diameter of the mouth is 5.1 mm, with compression, a veno-venous discharge is determined.

SSV on the left is 3.8 mm in diameter; veno-venous discharge is not detected during compression.

Communicating veins along the inner

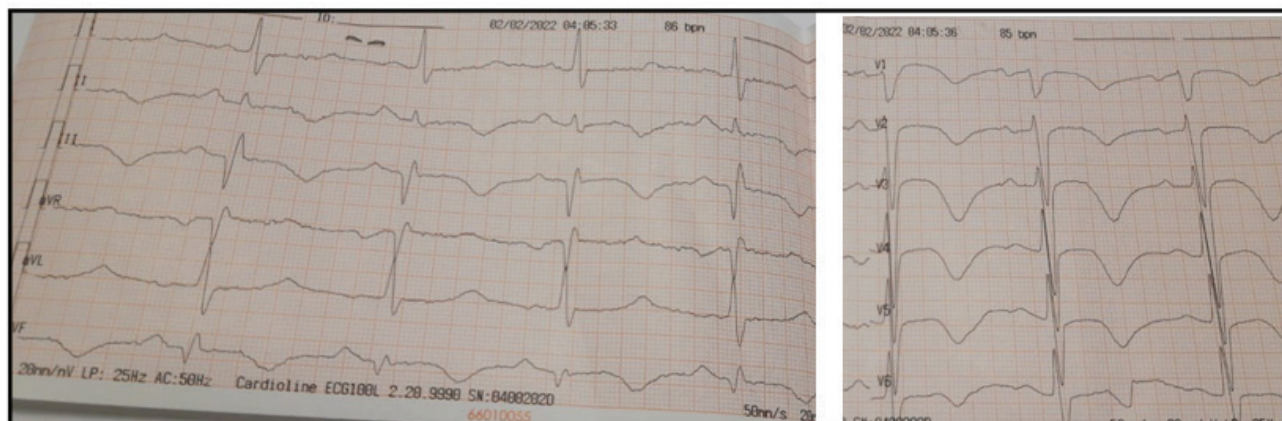
surface of both legs in the middle and lower thirds with a diameter of up to 2.5 mm, with compression, the veno-venous discharge is not located.

Consulted by a vascular surgeon: subacute phlebothrombosis of the femoral-popliteal segment on the left (no signs of flotation). Chronic venous insufficiency of the lower extremities of 1-2 degrees. Treatment prescribed: tab. Rivaroxaban 20mg, compression hosiery class 2, topically - Detralex ointment. In the future, against the background of treatment, the appearance of edema and hyperemia of the right leg is noted.

On the basis of clinical data, anamnesis, objective examination, laboratory and instrumental data, a preliminary diagnosis was made: Subacute phlebothrombosis of the femoral-popliteal segment on the left (without signs of flotation). Chronic venous insufficiency of the lower extremities of 1-2 degrees. Thromboembolism of small branches of the pulmonary artery. Respiratory failure 3. Pulmonary hypertension. Enlargement of the right heart, expansion of the pulmonary artery. 1st degree tricuspid valve insufficiency. Hypertension controlled, stage 1, risk 3 (age, hyperuricemia, heredity, dyslipidemia).

For further observation, additional examination and correction of treatment, the patient was sent for hospitalization.

Conclusion. PE belongs to the group of life-threatening conditions, so the patient's prognosis directly depends on how timely the diagnosis is established and full-fledged therapeutic measures will be started. The absence of hemodynamic instability at the onset of the disease does not exclude the development and progression of pathological changes, such as respiratory and right ventricular heart failure, as well as an increased risk associated with PE. Only adequate restoration of the patency of the pulmonary arterial bed in the acute period of the disease



ECG of patient C, 81 years old

is a reliable way to avoid severe chronic post-embolic pulmonary hypertension or minimize the long-term hemodynamic consequences of pulmonary embolism [6]. In this clinical situation, based on a number of characteristic clinical data, taking into account the high probability of PE, the disease was diagnosed in the subacute period. Within two weeks after the alleged episode of thromboembolism, despite the absence of hemodynamic instability, the patient developed symptoms of not only right ventricular heart failure, postembolic pulmonary hypertension, respiratory failure, but also DVT of the lower extremities. In this regard, it is necessary not only to be vigilant about venous thromboembolism in primary care physicians, especially in patients of older age groups, but also a thorough analysis

of clinical and instrumental data, an additional assessment of the risk level of pulmonary embolism, followed by correction of patient management tactics.

Reference

1. Vertkin A.L., Gritsanchuk A.M. Tromboemboliya legochnoy arterii: epidemiya, o kotoroy vse molchat [Pulmonary embolism: an epidemic that everyone is silent about]. *Arkhiv" vnutrenney meditsiny* [The Russian Archives of Internal Medicine. 2014;(1):33-39. (In Russ.)] DOI: 10.20514/2226-6704-2014-0-1-33-39
2. Kapsultanova D.A., Polzik G.B., Sadykova Sh.S. [et al.]. Klinicheskiy sluchay retsiviruyushchey tromboembolii legochnoy arterii [Clinical case of a recidivous tromboemboliya of a pulmonary artery]. *Vestnik Kazakhskogo natsional'nogo meditsinskogo universiteta* [Bulletin of the Kazakh National Medical University. 2017;(2):41-43. (In Russ.)]
3. Nikulina N.N., Terekhovskaya Yu.V. Epidemiologiya tromboembolii legochnoy arterii v sovremennom mire: analiz zabolevayemosti, smertnosti i problem ikh izucheniya [Epidemiology of pulmonary embolism in today's context: analysis of incidence, mortality and problems of their study]. *Rossiyskiy kardiologicheskiy zhurnal* [Russian Journal of Cardiology. 2019;(6):103-108. (In Russ.)] DOI: 10.15829/1560-4071-2019-6-103-108
4. Essien EO, Rali P, Mathai SC. Pulmonary Embolism. *Med Clin North Am.* 2019;103(3):549-564. DOI:10.1016/j.mcna.2018.12.013
5. Konstantinides SV, Meyer G, Becattini C [et al.]. 2019 ESC Guidelines for the diagnosis and management of acute pulmonary embolism developed in collaboration with the European Respiratory Society (ERS). *Eur Heart J.* 2020;41(4):543-603. DOI:10.1093/eurheartj/ehz405
6. Martinez Licha CR, McCurdy CM, Maldonado SM, Lee LS. Current Management of Acute Pulmonary Embolism. *Ann Thorac Cardiovasc Surg.* 2020;26(2):65-71. DOI:10.5761/atcs.ra.19-0015

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CLINICAL CASE: POSTCOVID MULTISYSTEM SYNDROME IN A 7 MONTH OLD CHILD

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The article presents a clinical case of multisystem inflammatory syndrome as a result of a new coronavirus infection in a 7 months old child. The clinical picture is similar to Kawasaki syndrome.

Keywords: postcovid multisystem syndrome, COVID-19, SARS-Cov-2, kawasaki-like syndrome.

On March 11, 2020, WHO declared the COVID-19 pandemic. At the end of December 2019, an outbreak of a new coronavirus infection (COVID-19) caused by the SARS-Cov-2 coronavirus, leading to severe acute respiratory syndrome, was recorded in Wuhan (Hubei Province, China). [1, 3, 5, 6]. Clinical picture in children, as a rule, is less severe than in adults. More than 90% of COVID-19 cases occur in children asymptomatically, in mild and moderate form [2]. The frequency of hospitalizations among children is also low. Thus, according to the CDC report, in the USA this figure was almost 2 times lower (5.7% versus 10% in adults), including fewer admissions to the intensive care unit. [4]. In March

2020, reports of outbreaks of a disease that meets the criteria of Kawasaki disease began to appear, accompanied by the development of a pronounced hyperinflammatory response associated with SARS-Cov-2 infection in previously healthy children. This disease has not been described before, in publications there were such names as "Kawashok", "Koronasaki", "hyperinflammatory shock in children with COVID-19", kawasaki-like disease", "pediatric multisystem inflammatory syndrome (PMIS)", "multisystem inflammatory syndrome in children (MIS-C)" [1].

Multisystem inflammatory syndrome in children (MIS-C)", also known as pediatric inflammatory multisystem syndrome, is a dangerous new children disease that is temporarily associated with a new coronavirus disease (COVID-19). This publication presents a clinical case in a child of 7 months.

Clinical case: a 7 months old child of Sakha ethnicity was admitted with complaints of merging rashes on the body, a runny nose, an increase in body temperature above 39 °C, and vomiting.

From the anamnesis of the disease, it is known that, according to his mother, he became acutely ill on November 8, 2020. The body temperature increased to 38.7 °C, which was treated with nurofen. Also, due to teething, dantinorm was admitted. A rash made an appearance on a back. Consultation with relative with medical expertise was conducted. Acyclovir 1/2 tab x 4rvd inside was admitted. There was no improvement the next day. The rash has spread all over the body, on the head, the scalp, merging with each other. Body temperature increased from 39.1 °C to 39.7 °C, treated with nurofen. Vomiting 1 time after eating. A doctor was called, child was sent to the Children's Infectious Diseases Clinical Hospital.

Epidemiological history: There was no contact with COVID-19 patients for 14 days. The father and mother were ill with COVID-19 in October (control PCR analysis of October 20 was negative).

From the anamnesis of life it is known that child was from first pregnancy, which proceeded smoothly. From 1 natural birth. Birth weight 3570 g, length 54 cm.

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